NERRS Science Collaborative Progress Report for the Period 09/01/2012 – 02/28/2013

Project Title: *Developing a Low Impact Development Manual for Coastal South Carolina to Serve as Guidance for Improved Stormwater Management*

Principal Investigator: Blaik Keppler; ACE Basin National Estuarine Research Reserve

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Report Compiled by: Blaik Keppler; Project Coordinator, ACE Basin National Estuarine Research Reserve

Contributing Team Members and their role in the project:

- Leigh Wood; Collaboration Lead, North Inlet-Winyah Bay National Estuarine Research Reserve
- April Turner; Collaboration Assistant, South Carolina Sea Grant Consortium
- Greg Hoffmann, P.E.; Applied Science Lead, Center for Watershed Protection
- Sadie Drescher; Applied Science Investigator, Center for Watershed Protection

A. Progress overview

The overall goal of this project is to develop a *Low Impact Development Manual for Coastal South Carolina* to provide local decision makers with the knowledge and resources to help them implement LID practices on the community, neighborhood, and site scale. To develop a guidance manual that will effectively inform its intended users, the project team is conducting a series of collaborative workshops and focus group meetings with applied science researchers and engineers to develop and tailor stormwater best management practices and an engineering spreadsheet tool to the hydrologic and soil conditions of the South Carolina coast. Simultaneously, the project team is also facilitating meetings with planners, landscape architects, and developers to ensure that the LID Manual provides appropriate land-use planning, site design, and ordinance guidance. Stormwater, development professionals, and climate change experts will then identify if and how these tools and guidance can be adapted to ensure they will be effective under changing climate conditions, such as increased variability in rainfall.

Progress on tasks for this reporting period:

The two year project began during this reporting period so the first priority was to coordinate and mobilize the project team, as well as the LID Manual Advisory Committee, a steering committee which is guiding the development of the manual. The major tasks defined in the project timeline and that the project team focused on during this period include:

1. *LID Manual Advisory Committee meetings:* The LID Manual Advisory Committee (LID MAC) held two meetings during this reporting period; October 2, 2012 and December 19, 2012. The first of these meetings was organizational in nature and to begin planning a strategy for the manual's development. The second meeting focused on preparing for the first stakeholder workshop, which was held on January 16, 2013.
2. *Intended User Workshops #1 and #2:* The project team initially envisioned two separate intended user workshops during this reporting period. For the sake of timing and efficiency for staff and participants, we decided to combine several elements of the two workshops into one and will include the remaining elements either in a later workshop or in focused discussions with a smaller group of intended users.
3. *Synthesis of Intended User input from workshops:* Survey data, workshop evaluation data, workshop notes, and other anecdotal information from the intended user workshop has been processed and is being used by the project team to guide the development of relevant guidance.

4. *Development of LID Manual Outline and Format:* A working outline for the LID Manual has been developed. After the intended user workshop, this outline was refined and the project team is using it as an organizational tool.

5, 6, 7 *Development of up to 15 BMP specifications and compliance spreadsheet tool, Development of planning and landscape design guidance, Development of coastal South Carolina case studies:* Work on items 5-7 is just beginning as it is based on input from the January stakeholder workshop. The project team will focus on these three items very heavily during the next reporting period.

B. Working with Intended Users

Intended user interaction began prior to receiving funding for this project. For several years, the two South Carolina NERR Coastal Training Programs and other partners have held trainings and workshops dealing with low impact development and the associated barriers. Through this interaction, in addition to input gathered during the development of a formal needs assessment, intended users defined a need for a guidance manual and a plan was developed to create one. However, due to a lack of funding, the project stalled for a short period. The NERRs Science Collaborative funding has provided an excellent opportunity and framework for the project to resume again. During this first grant period, the project team took the opportunity to reconnect with intended users who were involved in the process in previous years, as well as engage new stakeholders. Intended user engagement occurred through the project's advisory committee, a collaborative workshop in January, and through informal interaction with coastal decision-makers that our project team regularly interacts and converses.

Intended User Workshop

On January 16, 2013 the project team held the first in a series of intended user workshops. This workshop was help in Charleston, SC and was open to intended users coast-wide. 55 participants attended representing a wide spectrum of those involved in stormwater management decisions at the state and local level including state regulators, stormwater managers, engineers, planners, landscape architects, developers, and researchers.

The workshop was designed to obtain intended user input on how to tailor an LID Manual for coastal South Carolina. During this program, workshop participants learned about the project, its partners, and the role of stakeholders in the manual's development. The workshop also covered information about existing tools, BMP specifications, model stormwater ordinances, and case studies from guidance manuals in other states.

Participant discussion helped the project team address the following questions:

- Should the LID manual be designed to help local communities exceed state stormwater requirements?
- What natural conditions should be considered in the development of LID tools and BMP specs for coastal South Carolina? And should they address water quantity, quality, or both?
- How should a Model Stormwater Ordinance and Ordinance Checklist be tailored to meet state requirements and local needs?
- How and which case studies from our coast should be described in the manual, including the depth and breadth of examples?

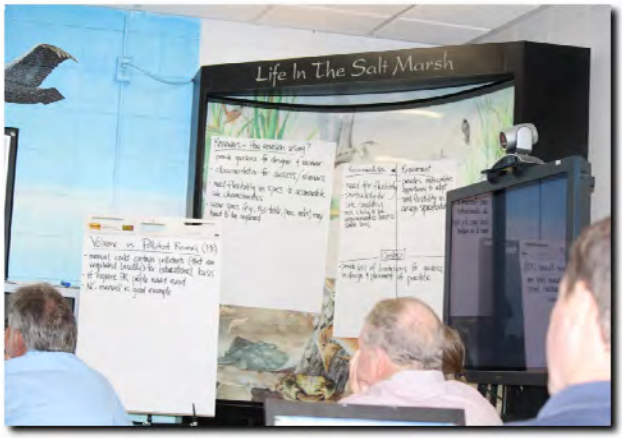

Figure 1: Participants in the technical breakout session answer questions related to their experience with stormwater design.

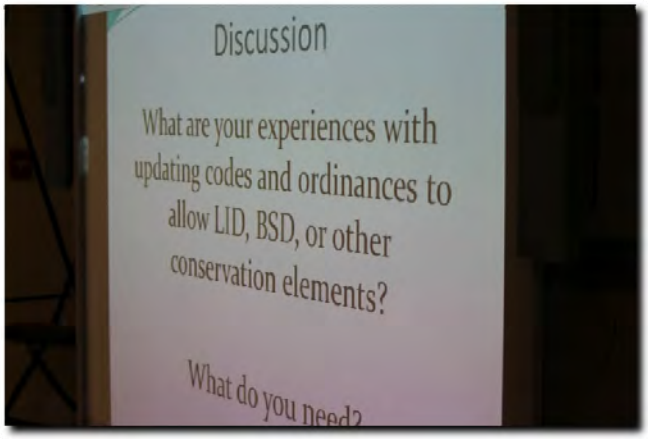

Figure 2: A question about experiences with planning and LID is posed to participants in the planning breakout session.

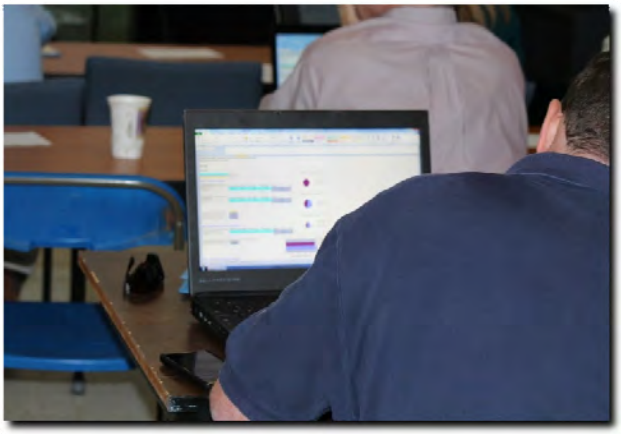

Figure 3: Participants in the technical breakout session test a spreadsheet tool designed by Center for Watershed Protection for the state of Georgia.

Figure 4: Participants in the planning breakout session discuss the stormwater checklist.

In an effort to keep our stakeholders informed of our progress, the project team set up a project website which houses information about the project, project partners, past events, upcoming events, and resources like workshop presentations and notes. The website is hosted on the North Inlet Winyah Bay NERR webpage and can be found here: http://www.northinlet.sc.edu/LID/.

LID Manual Advisory Committee

A slight change, and unexpected opportunity, was the addition of a rather large number of intended users to the LID Manual Advisory Committee (LID MAC). The Committee felt that better representation was needed from the various sectors involved in stormwater decision-making. At the intended user workshop, the LID MAC was introduced and volunteers to sit on this committee were solicited. Eighteen workshop participants graciously volunteered to be members of this committee. They include private and public sector engineers, developers, municipal stormwater managers and public works staff, planners, regulatory staff, and a representative from an environmental non-profit organization. Access to such a large and diverse group of intended users has allowed us to re-think our intended user engagement moving forward. Rather than continuing to hold a few large workshops, we are exploring the idea of utilizing this group of intended users on a more frequent basis. This will allow for deeper and

more continued conversation with a subset of intended users who have volunteered to represent a wider group.

In the next six months
As guidance is developed, intended users will be consulted to ensure that the manual (a) addresses their suggestions and concerns, (b) is clear and user-friendly, and (c) appropriately accounts for the natural conditions of coastal South Carolina. These steps will help ensure that the project team is creating a product that stormwater and development practitioners will be able to use in their decision-making. We will leverage the support of the intended users who volunteered to serve on the Manual Advisory Committee for this task by asking them to review portions of the guidance manual or participate in interviews or focus groups.

C. Progress on Project Objectives for this reporting period
The overall goal of this project is to increase implementation of LID practices through the collaborative development of a *Low Impact Development Manual for Coastal South Carolina.* To accomplish this, the following project objectives are defined:
- *Objective 1: Remove targeted barriers to LID implementation by providing engineers, planners, and other coastal decision-makers with guidance specific to their individual professional needs.*
- *Objective 2: Develop LID BMP engineering tools and planning guidance for South Carolina coastal communities that are relevant under current and future climatic conditions.*
Objective 3: Increase the capacity of local officials, stormwater professionals, and developers to implement LID strategies by providing effective training for coastal communities.

During the first grant period, the project team began to address Project Objective 1. The stakeholder workshop held on January 16, 2013 was designed to ask questions that will allow us to develop guidance for engineers, planners, and other coastal decision-makers that is specific to their professional needs. As mentioned above, a wide array of stakeholders were represented at the workshop and their input was sought on how the team should address their needs. The project team is using this input to move forward with designing technical, as well as planning and site design, guidance.

Data Collection
Data collected at the intended user workshop includes survey and workshop evaluation data, as well as discussion notes and evaluation comments. The project team is using this data to make decisions about the guidance that will be developed for and included in the LID Manual. We are also using data regarding the workshop itself to help shape our intended user engagement in the future.

Additional information collected during this period includes a list of local stormwater and LID-related research projects and local government codes and ordinances related to stormwater. This information is housed in databases which are located on Dropbox, our project management tool of choice. Additionally, intended users were introduced to the South Carolina LID Atlas as part of Workshop #1. This atlas is part of an online, nationwide clearinghouse of LID-related projects, although our state's information happens to be managed by South Carolina Sea Grant Consortium, who are members of our project team. The atlas has proved to be a useful tool for storing information about LID projects at any scale. Workshop participants reported that they are interested in entering information about their own projects into the database, as well as referencing it to find information about other projects. The atlas will also serve as a database that the project team will use to find locally relevant case studies to showcase in detail in the guidance manual.

Changes to methods
Our progress during this period has brought about two slight changes to our method with respect to the integration of intended users. First, as discussed above, the project team made the decision to combine some elements of Workshops #1 and #2 into one workshop. This decision was made mainly for the sake of efficiency for project staff and workshop participants, as well as staying on track with our project timeline. The second change was the addition of a large number of intended users to the Manual Advisory Committee, as discussed in the previous section.

Plans for meeting project objectives
In the next six months, project staff will continue to make progress on Objective 1 (*providing engineers, planners, and other coastal decision-makers with guidance specific to their individual professional needs*). As guidance is developed, intended users will be consulted to ensure that the manual (a) addresses their suggestions and concerns, (b) is clear and user-friendly, and (c) appropriately accounts for the natural conditions of coastal South Carolina These steps will help ensure that the project team is creating a product that stormwater and development practitioners will be able to use in their decision-making.

The team will also begin to address Objective 2 in the next reporting period (*Develop LID BMP engineering tools and planning guidance for South Carolina coastal communities that are relevant under current and future climatic conditions*). We will bring together the project applied science staff, local and regional climate scientists, and researchers whose work connects stormwater with climate to discuss the integration of climate scenarios with stormwater design tools.

D. Benefit to NERRS and NOAA
The three databases mentioned above (the list of stormwater and LID-related research projects, the database of stormwater codes and ordinances, and the LID atlas) may be of interest to NERRs and NOAA scientists or managers working on stormwater or LID issues.

Also, the project team has recently begun discussions with staff from two other NERRs Science Collaborative projects dealing with LID and stormwater (in Ohio and New Hampshire). Discussion has centered on information-sharing and finding commonalities between our projects and processes. Although these discussions are very preliminary, there is great potential to be able to share information about our projects, process, successes, and lessons learned with others.

E. Other activities, products, accomplishments, or obstacles:
One obstacle that the project team has faced during this grant period has been the hiring of a project assistant. Our project budget allowed for a full-time project assistant to be employed through the University of South Carolina beginning as soon as funds were allocated from UNH. However, we have encountered several complications in the hiring process, which has delayed the project. We are now scheduled to bring an assistant on board in mid-March 2013, but this is approximately six months later than we had intended, putting us behind schedule with respect to the compilation and writing of the manual.